A.E. 432

ECONOMIC CONSIDERATIONS IN THE SHEEP BUSINESS

INCLUDING MAXIMUM USE OF PASTURE IN INTENSIFIED OPERATIONS[1]

There are many different basis for farmers' decisions, and economics is only one of them. There is an old adage that says, "We see things not as they really are but as we are." This is one of the reasons why old habits and methods persist even though new technology makes the job easier and/or more profitable. The communication gap and the technological gap go side by side in causing a lot of our farm income problems. A better understanding of the sociological aspects of the farm community and more knowledge concerning the real goals and objectives of the farm family would help when assisting farmers with management decisions. Many farmers are still far from being informed concerning the costs and benefits of new technology as it affects their specific farm and ultimate consumer. As educators we have been guilty many times of helping only on the input side of the decision rather than helping analyze the output side and the net profit that results from the total farm operation and the acceptance of the product by the consumer.

Technological improvements have greatly increased productivity per man in today's agriculture, but this rate of improvement has varied considerably between farm enterprises. Efficiencies in the crop enterprises have improved much faster than in the livestock programs. As you will note in Figure 1, where labor efficiencies are compared between meat animals, milk cows, and feed grain crops, that the crop operations have far surpassed the livestock enterprises since the early 1940's. The dairy enterprise has out-ranked the meat animal group. Meat animals are all classified together for this comparison, but I am sure that there are variations between sheep, swine, and the beef enterprises as far as the improvement that has been made in labor efficiency in the last decade. Observation in Ohio would indicate that sheep automation is on the low side compared to swine and beef feeding. Continuous and competent labor is becoming more and more the main restriction in the available farm resources. The main resources available on any farm or business are land, labor, capital, and management. From a management standpoint the first question to answer is what enterprise or combination of enterprises would make the best use of the available land, labor and capital for the maximum net farm return? Determine which resource is the most restricted and to what extent the resources are fixed. Labor on many farms is the most restricting and fixed resource.

The resource efficiency that nearly always coincides with high labor and management income in farm record programs is the one with high labor productivity or high amounts of product produced per man. From an economic sense, then, a farmer must be able to handle enough brood ewes, using the latest known technology to make a standard of living equal to other alternative uses of his labor and management. Low production per unit of labor has been the stumbling block on the road to increased income from sheep and other livestock enterprises during the past decade for many farmers. This low

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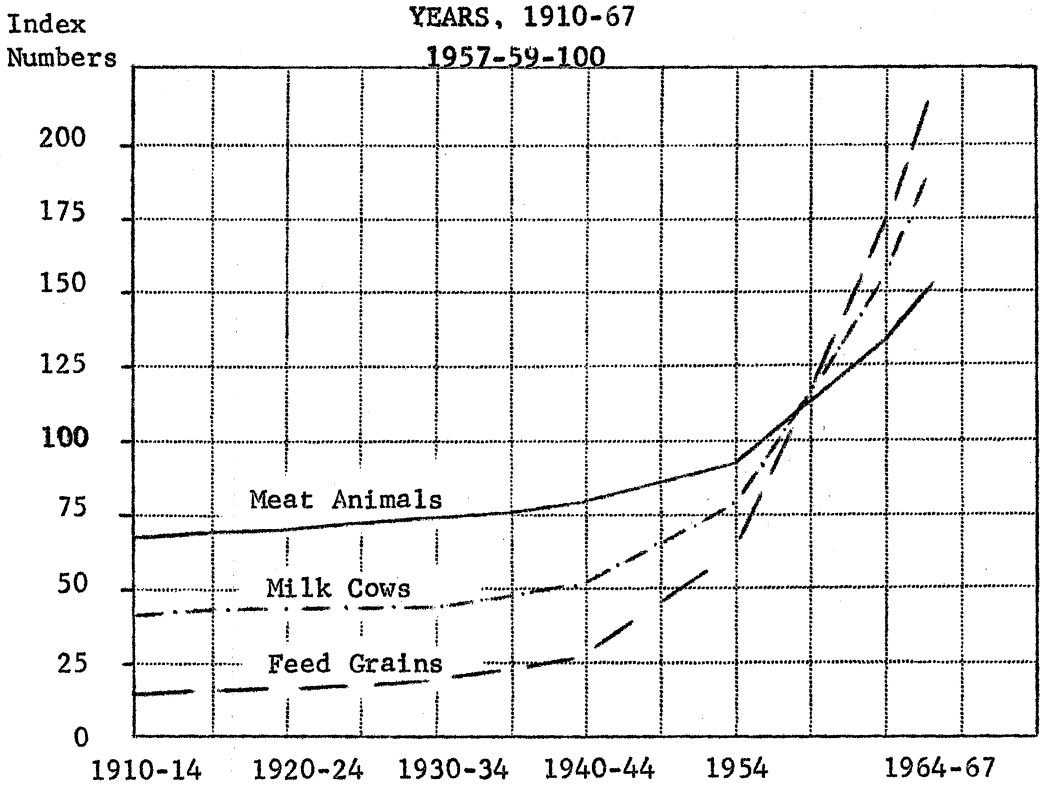
[1]Paper presented at the Sheep Symposium Production and Business Management at the Ohio Resource and Development Center, Wooster, Ohio, by John E. Moore, Extension Economist, Farm Management, Ohio State University, Columbus, Ohio, December 6, 1968.

efficiency is caused mainly by a carryover of manual methods from days when off-season labor was sufficient for handling the livestock enterprise and by poor farmstead layouts. Today the trend is toward full mechanization and maximum numbers of livestock per man. However, unit efficiency is the first step and increased volume the second most important step. Overhead costs from mechanization can be a real burden unless the labor freed by automation is productively employed elsewhere and unless the new mechanization is adequately used in order to pay for the annual cost of ownership of the machinery, equipment, or buildings. Another very important competitive pressure in Ohio for the use of the farmer's labor that is not used in crop production is the availability of off-farm jobs that may be more pleasant, less risky, and provide a higher income than if that labor were applied to a livestock enterprise.

There are three main reasons for livestock on farms; namely, (1) to realize greater returns from marketable crops than if the crops were sold directly; (2) to profitably utilize crops and crop residues which have little or no direct marketable value; and (3) to profitably utilize surplus labor.

FIGURE 1. INDEX NUMBERS OF FARM PRODUCTION PER MAN HOUR BY GROUPS OF ENTERPRISES, U.S. SELECTED YEARS, 1910-67



SOURCE: Statistical Bulletin No. 233. June, 1968, U.S.D.A. "Changes in Farm Production and Efficiency."

Trends in livestock numbers over the past decade show sheep numbers declining considerably in comparison to other livestock species. This would indicate that the applied new technology in the sheep business has not been adequate to make the sheep enterprise competitive with other livestock.

Can Sheep Regain A Competitive Position?

This depends on how the new knowledge available will make possible lower costs per unit and greater numbers of units possible per man. This situation has to improve to the point where the net income from sheep will compare with other livestock enterprises and other alternative uses for the man's labor. Table 1 contains a budget that reflects what the top commercial flocks in the Ohio Master Shepherd's Program are doing with ewe flocks of over 100 ewes. Overhead costs are estimated. The budgeted results are above average in performance, but these results are actually being attained by the above group. The reality of the situation is that the average or below average performer in farming will not have much of a chance of surviving the competition during the next decade. The Master Shepherd's records only report performance as far as lambing percentage; gross sales from lamb and wool per ewe; and in addition estimated feed inputs where actual records are not available. Detailed farm records on farms where sheep are a major enterprise are hard to find. Our Ohio Farm Record Program analyzes the total farm record by enterprise groups. The basis for an enterprise group is that 50 per cent or more of the total farm income has to come from that particular enterprise. We do not have a single farm record classified in the sheep enterprise category. Farm flocks over 500 ewes are very few in Ohio.

Roy N. Van Arsdall of the University of Illinois has reported that with average methods of handling sheep one man could take care of 625 ewes per year, and with efficient methods one man could handle 1,250 ewes. Assuming these labor performance levels are attainable and that the new technology is available in the feeding and production management areas to bring about a net income of $7.75 per ewe plus the labor charge as budgeted in this paper, then a very desirable labor and management income could be attained. However, assumptions can get us into trouble and the greatest unpredictable variable is the man. The eye of the master is still non-substituable by automation.

New Technology Available That Will Lower The Cost Of Production

Maximum Use of Pasture can lower feed costs. Feed makes up over 50 per cent of the costs in the sheep business and according to Charles Parker, Ohio Agricultural Research and Development Center, this is the area of greatest opportunity to cut the cost of production. He stresses minimizing feed intake in certain stages of the production cycle. For example, intensification of pasture use by heavy stocking with ewes following weaning to breeding. This minimizes feed intake and keeps the ewes resonably thin. The ewes will respond to flushing better with higher lambing percentage resulting.

TABLE 1. BUDGET PER EWE - EARLY AND LATE LAMBING

	Early Lambing (Jan. & Feb.)	Late Lambing (Apr. & May)
Costs		
Feed	$16.82	$16.23
Labor @ $2 per hour	6.00	7.50
Veterinary and Medicine	.28	.42
Shearing	.70	.75
Dipping	.25	.25
Building and equipment - 12%	1.44	1.44
Breeding or ram charge 1/	.50	.50
Interest, 6% on livestock and operating capital	1.52	1.50
Miscellaneous, electric, supplies	.59	.28
Ewe depreciation 2/	4.00	4.00
TOTAL	$32.10	$32.87
Returns 3/		
140% lamb crop 95# @ $23.00 cwt.	$30.59	Same as
@ $25.00 cwt.	33.25	early
@ $27.00 cwt.	35.91	lambing
Wool 10# @ $.66	6.60	
Net Returns @ $23.00 cwt.	5.09	4.32
@ $25.00 cwt.	7.75	6.98
@ $27.00 cwt.	10.41	9.64
Labor and Management Return @ $25 cwt.	13.75	14.48
Investment Per Ewe		
Land .5 acres	$200.00	$200.00
Buildings and equipment, ½ of new cost	12.00	12.00
Livestock, average for ewe ($14) and ram ($1.25)	15.25	15.25
Operating capital, ½ of feed and cash expenses	10.07	9.73
TOTAL	$237.32	$236.98
Feed Requirements and Prices		
Corn, $1.10 bushel	2.0 bu.	2.0 bu.
Oats, $.65 bushel	2.0 bu.	1.4 bu.
Supplement, $5 cwt.	14.0 lbs.	10.0 lbs.
Hay, $25 ton	.33 tons	.33 tons
Pasture, 6 mos. expressed as hay equivalent - $12.50 ton	.35 tons	.35 tons
Labor Requirements	3 hours	3.75 hours
Space Requirements		
Housing - ewe, no lambs	10-14 sq. ft.	
ewe, with lambs	12-16 sq. ft.	
Lot size	Twice the above figures	
Bunks, hay and grain	12 inches per animal	
Self feeders	5-10 animals per ft.	
Water needs	10 animals per ft. of water	

1/ Ram cost $60, salvage value, $15, 3 years of life, 30 ewes per ram
2/ Ewe cost $24, salvage value, $4, 5 years of life
3/ Returns are after marketing charges and death losses have been deducted. Credit for lamb wool incentive payment is included in the returns per cwt. pric

Winter grazing by deferring summer pasture after August 1 to allow regrowth to accumulate for winter grazing shows much promise in Ohio research. This production management practice would save on the feed bill as well as on the labor costs. It would save labor in haymaking, winter feeding, and manure hauling.

"Winter grazing research with sheep was initiated at the Ohio Agricultural Research and Development Center in 1966 by deferring an early-grazed pasture from June 27 to mid-November. The pasture available was predominately tall oatgrass with approximately 25 per cent Kentucky bluegrass and timothy. The field was fertilized with 200 pounds of ammonium nitrate in mid-August. Electric fence was used to sub-divide the field into four areas to control the grazing. Forty-one mixed aged ewes were placed on the first grazing area on November 16. The stocking rate of four ewes per acre was selected to obtain a maximum grazing period. The ewes were not housed or given supplemental feed until lambing began on February 15. At this time all ewes were moved to a barn and fed a ration consisting of 4 pounds of alfalfa hay and 1½ pounds of concentrate food. An important economic factor was the saving of 316 pounds of alfalfa hay, 159 pounds of legume silage, and 54 pounds of concentrate per ewe in the winter grazed flock as compared to the in-barn control group. This amounted to a saving of about $6 in feed cost per ewe."[2]

The researchers realize that all the critical factors are not yet defined for this type of program. It shows promise of lowering the feed and labor costs from a fourth to one-third.

Companion livestock grazing research at the Ohio Station in 1965-66 showed sheep alone produced the greatest number of pounds of meat per acre over cattle and sheep together. However, there appears to be a real advantage to including sheep with cattle as compared to cattle alone

Performance Tested Rams and Creep Fed Lambs lowers feed costs. Ohio has completed a one-year research project under the supervision of Dr. Jack Judy, Animal Science Department, on creep feed utilization. Hampshire and Corriedale performance tested rams sired lambs from Targi ewes. Lambs were started on creep feed at the earliest possible age and averaging 70 days on creep feed prior to weaning.

The 43 Hampshire lambs utilized 1.52 pounds of feed per pound of gain during the nursing period and 4.64 pounds of feed during the post weaning period. The Hampshire lambs were marketed at 123 days of age and at an average weight of 96.1 pounds per lamb. The total feed consumption was 2.45 pounds of feed per pound of gain from lambing weight to market weight.

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[2]Parker, C. F. and Van Keuren, R. W., "Winter Pasture for Sheep," Reprinted from Ohio Report 52 (5): 69-70 Sept.-Oct., 1967. Ohio Agricultural Research and Development Center, Wooster, Ohio.

The 82 Corriedale lambs consumed per pound of gain, 1.56 pounds of feed during nursing period, 5.64 pounds during post-weaning period, or an average of 3.08 pounds of feed per pound of gain from lambing weight to market weight. These lambs were 142 days of age at marketing and weighed 88.2 pounds per head.

When you compare this efficient rate of feed utilization of approximate 3 pounds per pound of gain to 6-8 pounds required to put on a pound of gain on feeder lambs, this is a saving of 8-10 cents per pound of gain. Ralph Grimshaw, Ohio Extension Sheep Specialist says that sheep breeding potential is far ahead of other production management in the sheep enterprise. He reports we need to manage the ewe flock to intensify the use of pastures and manage the lambs with creep feeding to eliminate the need for drenching the lambs and to obtain maximum feed efficiency.

Use of Electric Fence lowers fencing costs and makes controlled grazing easier which aids in maximizing the use of pasture. Electric fencing can be erected for $.90 per rod as compared to a cost of $6.34 per rod for woven wire fence. Table 11 contains a comparison of costs of three different types of fence construction.

High voltage electric fence has another big advantage, dog control. Ohio sheepmen's experience with electric fence shows that dogs are no problem when electric fence is used.

TABLE 11. FENCING CONSTRUCTION COSTS COMPARED PER ROD

Electric vs. Woven Wire vs. Barb Wire

(1968 S.E. Ohio Research Station)

Type of Fence	Material Cost in Construction	Tractor & Equip. Cost	Construction Labor Cost	Total Cost of Fence
Woven Wire 47 inches	$2.48	$.89	$2.97	$6.34
Barb Wire (5 strands)	1.60	.72	2.38	4.78
Electric (2 wires)	.40	.25	.25	.90

A linear programming investigation to determine the optimum organization of farm enterprises including sheep, feeder pigs, and feeder calf production using a hypothetical example of an Eastern Ohio farm was conducted by Dr. Glenn Himes, Extension Economist, Ohio State University. The investigation showed (1) that feeder pigs was the only enterprise appearing on the results if labor were charged at $2 per hour and pasture rent at $10 per acre (two acres needed per animal unit), other variable and fixed costs were charged; (2) that the

sheep enterprise came in earning $2 per hour in combination with feeder pigs when pasture rent was lowered to a charge of $7.50 per acre; and (3) that the feeder calf enterprise did not appear in the program results even with a $7.50 charge for pasture per acre and a $2 charge per hour in competition with feeder pigs and an ewe flock. All three enterprises were programmed at above average performance of production.

However, there are other non-economic factors that might cause feeder calf production to be selected by a farmer over sheep such as personal preference, less operational management needed, less risk from predators, more prestige with beef cattle, etc.

This hypothetical linear programming example demonstrates the terrific competition the sheep industry experiences, not only with the labor used in crop production, but with the labor used in the other meat animal enterprises.

The big challenge in the sheep industry is to improve labor efficiency through larger units so that labor-saving equipment and facilities can be afforded, and to continually search for ways of lowering feed and other costs of production. This will help to make it possible for the sheep industry to survive the competition of not only the other livestock enterprises, but also the synthetic products and the non-farm labor alternatives.